

What is claimed is:

1        1. A lithographic process for fabricating an article comprising:  
2                introducing an image of a pattern into a layer of energy sensitive material formed over a  
3        substrate;  
4                developing the image to form the first pattern having features of a first size in the energy  
5        sensitive material;  
6                reducing the size of at least a portion of the developed features having the first size by  
7        exposing the features having the first size to a liquid isotropic etchant to form features having a  
8        second size; and  
9                transferring the pattern with the features having a second size into the underlying  
10      substrate.

1        2. The process of claim 1 wherein the image is introduced into the energy sensitive resist  
2        material by directing radiation onto a lithographic pattern mask thereby projecting an image of  
3        the mask pattern into the energy sensitive resist material.

1        3. The process of claim 1 wherein the image is introduced into the energy sensitive resist  
2        material by directly writing the pattern using a beam of radiation.

1        4. The process of claim 1 wherein the energy sensitive material is formed on an anti-  
2        reflection coating layer formed over a substrate.

1        5. The process of claim 4 wherein the anti-reflection coating is an inorganic anti-  
2        reflection coating.

1        6. The process of claim 5 wherein the anti-reflection coating is an inorganic dielectric material  
2        comprising silicon, oxygen and nitrogen.

1        7. The process of claim 5 wherein the anti-reflection coating is formed over the substrate  
2        by chemical vapor deposition.

1        8. The process of claim 1 wherein the layer of energy sensitive resist material is formed  
2        on a layer of polycrystalline silicon formed over the substrate.

1        9. The process of claim 2 wherein the wavelength of the radiation directed onto the mask  
2 is selected from x-ray radiation, extreme ultraviolet radiation, 157 nm radiation, 193 nm  
3 radiation, deep ultraviolet radiation, I-line radiation and particle beam radiation.

1        10. The process of claim 9 wherein the particle beam radiation is selected from the group  
2 consisting of ion beam radiation and electron beam radiation.

1        11. The process of claim 1 wherein the article is a semiconductor device.

1        12. The process of claim 1 wherein the article is an optical device.

1        13. The process of claim 1 wherein the article is a lithographic mask.

1        14. The process of claim 1 wherein the substrate is a semiconductor substrate on which  
2 is formed a layer of oxidized silicon.

1        15. The process of claim 1 wherein the energy sensitive resist material is a positive  
2 energy sensitive resist material.

1        16. The process of claim 1 further comprising baking the developed pattern before the  
2 reducing step.

1        17. The process of claim 16 wherein the developed pattern is baked at a temperature that  
2 is below the glass transition temperature of the energy sensitive material.

1        18. The process of claim 5 wherein the anti-reflection coating is a hardmask coating.

1        19. The process of claim 1 wherein the energy sensitive material is formed on a hard  
2 mask coating formed over a substrate.